

## Message Text

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PAGE 01 STATE 055620  
ORIGIN EUR-12

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FM SECSTATE WASHDC  
TO AMEMBASSY SOFIA  
INFO AMEMBASSY BUCHAREST

C O N F I D E N T I A L STATE 055620

E.O. 11652: GDS

TAGS: PFOR, SWEL, BU

SUBJECT: ANALYSIS OF ROMANIAN EARTHQUAKE

REF: SOFIA 0496

1. TEXT OF AN ANALYSIS OF THE ROMANIAN SEISMIC SITUATION  
PREPARED BY EARTHQUAKE SPECIALISTS OF THE US GEOLOGICAL  
SURVEY (DATED MARCH 8, 1977) IS AT PARA 3. EMBASSY MAY  
CONVEY THIS ANALYSIS TO APPROPRIATE BULGARIAN AUTHORITIES  
AND SHOULD EMPHASIZE AT THAT TIME THAT IT IS NOT A PREDICT-  
ION OF A SECOND EARTHQUAKE BUT AN ANALYSIS OF EMPIRICAL DATA.

2. DEPARTMENT HAS NO PLANS AT THIS TIME EITHER TO WARN  
TRAVELERS IN ROMANIA OR BULGARIA OR TO GIVE ADVICE TO  
AMERICAN RESIDENTS IN THOSE COUNTRIES.

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3. BEGIN TEXT: THE EARTHQUAKE THAT STRUCK ROMANIA AT 19:21  
GMT ON MARCH 4, 1977, (MAGNITUDE 7.2) OCCURRED IN A REGION  
CHARACTERIZED BY A LONG HISTORY OF DAMAGING EARTHQUAKES  
DATING FROM ROMAN TIMES. IN CONTRAST TO MOST DAMAGING  
EARTHQUAKES, WHICH OCCUR AT SHALLOW DEPTH, I.E. LESS THAN  
ABOUT 30 KM (18 MILES), MOST DAMAGING ROMANIAN EARTHQUAKES,  
LIKE THE ONE ON MARCH 4, OCCUR AT MUCH GREATER DEPTHS, I.E.

100-150 KM (60-90 MILES). THE NATURE AND ORIGIN OF SUCH

DEEP EARTHQUAKES IS POORLY UNDERSTOOD. HOWEVER, SOME EMPIRICAL DATA ABOUT THESE EARTHQUAKES ARE USEFUL IN ANTICIPATING SHOCKS THAT MAY FOLLOW THE MARCH 4 EVENT. THESE EMPIRICAL OBSERVATIONS SUGGEST THAT THE MARCH 4 EARTHQUAKE MAY BE FOLLOWED BY ANOTHER EARTHQUAKE WITH MAGNITUDE 6 OR GREATER WITHIN DAYS OR MONTHS.

4. MOST LARGE SHALLOW EARTHQUAKES ARE FOLLOWED BY A SEQUENCE OF AFTERSHOCKS (THAT IS, A SEQUENCE OF NUMEROUS EARTHQUAKES FOLLOWING THE MAIN SHOCK, BUT OF LESSER MAGNITUDE, BEGINNING WITH A HIGH FREQUENCY OF OCCURRENCE IMMEDIATELY AFTER THE MAIN SHOCK THAT DECREASES AS TIME PASSES). WHILE SOME OF THE LARGE, DEEP ROMANIAN EARTHQUAKES HAVE BEEN FOLLOWED BY AFTERSHOCK SEQUENCES, OTHERS HAVE OCCURRED SINGLY WITHOUT AFTERSHOCKS. SEVERAL OCCURRED IN PAIRS WITH FEW IF ANY AFTERSHOCKS (SEE TABLE). THIS TENDENCY FOR THE LARGE EARTHQUAKES TO OCCUR IN PAIRS WAS DISPLAYED IN 1912, 1940 AND 1945. IN 1940, FOR EXAMPLE, AN EARTHQUAKE OF MAGNITUDE 6.5 OCCURRED ON OCTOBER 22. NO SIGNIFICANT AFTERSHOCKS FOLLOWED, UNTIL ONE OF MAGNITUDE 5.1 ON NOVEMBER 8, FOLLOWED BY THE SEVERE EARTHQUAKE OF NOVEMBER 10, MAGNITUDE 7.4. SIMILARLY IN 1945, THE EARTHQUAKE OF SEPTEMBER 7, MAGNITUDE 6.5 WAS FOLLOWED BY ONLY ONE SIGNIFICANT AFTERSHOCK UNTIL THE MAGNITUDE 6.0 EARTHQUAKE OF DECEMBER 9. FROM THE TABLE IT CAN BE SEEN THAT OF THE EIGHT LARGE, DEEP EARTHQUAKES OCCURRING IN THIS CENTURY IN ROMANIA, SIX

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OCCURRED AS MEMBERS OF PAIRS SEPARATED BY TIME PERIODS RANGING FROM LITTLE MORE THAN TWO HOURS TO 3 MONTHS.

5. CONSEQUENTLY, IT WOULD BE IMPRUDENT TO BELIEVE THAT THE DANGER HAS PASSED BECAUSE NO SIGNIFICANT AFTERSHOCKS (MAGNITUDE GREATER THAN 4.5) HAVE BEEN OBSERVED FOLLOWING THE MARCH 4 EARTHQUAKE. ON THE CONTRARY, THE EMPIRICAL DATA SUGGEST THAT ANOTHER LARGE EARTHQUAKE MAY OCCUR WITHIN WEEKS TO MONTHS. THERE HAVE BEEN THREE INSTANCES OF PAIRED EARTHQUAKES AND TWO INSTANCES OF SINGLE EARTHQUAKES IN THIS REGION THIS CENTURY.

TABLE: LARGE, DEEP EARTHQUAKES IN ROMANIA SINCE 1900, MAGNITUDE GREATER THAN 6. (SOURCE KARNICK, VIT, SEISMICITY OF THE EUROPEAN AREA, 1969)

YEAR	DATE	MAG	DEPTH	COMMENTS
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1908	OCT. 6	6.8	150	NO SIGNIFICANT AFTERSHOCKS
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1912 MAY 25 6.4 100 ONE OR TWO SIGNIFICANT AFTER-  
SHOCKS

1912 MAY 25 6.3? 100 ONE OR TWO SIGNIFICANT AFTER-  
SHOCKS

1934 MAR 29 6.9 150 NO SIGNIFICANT AFTERSHOCKS

1940 OCT 22 6.2 150 ONE SIGNIFICANT AFTERSHOCK  
(NOV. 8)

1940 NOV 10 7.3 150 MANY SIGNIFICANT AFTERSHOCKS

1945 SEPT 7 6.5 100 ONE SIGNIFICANT AFTERSHOCK  
(SEP 14)

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1945 DEC 9 6.2 100 NO SIGNIFICANT AFTERSHOCKS

MAGNITUDE GREATER THAN 4.5

END TEXT

4. FYI. IT APPEARS THAT BRITISH SEISMOLOGISTS, ACCORD-  
ING TO NEWS REPORTS, DISAGREE WITH USGS ANALYSIS CONCERN-  
ING A SECOND EARTHQUAKE WHILE THOSE AT UPPSALA TEND TO  
AGREE. YOU SHOULD KNOW THAT AMBASSADOR BARNES HAD AN  
UNPLEASANT ENCOUNTER WITH ROMANIAN FOREIGN MINISTER  
MARCH 9 WHO TOLD HIM THAT EMBASSY'S RELEASE OF CONTENTS  
OF "SECRET" TELEGRAM CONTAINING ANALYSIS WAS "AN ACT OF  
PROPAGANDA." HE CLAIMED THAT EMBASSY RELEASE AND AMBASSA-  
DOR'S PRESS CONFERENCE (DURING WHICH QUESTION OF SECOND  
EARTHQUAKE WAS DISCUSSED ON BASIS OF ANALYSIS) HAD RESULT  
OF STIMULATING PANIC AMONG POPULATION. THIS MATTER IS  
NOW BEHIND US AND USGS/NBS TEAM IS GOING TO ROMANIA IN  
NEXT FEW DAYS. ROMANIAN MEDIA AND PRESIDENT CEAUSESCU  
HAVE DISCOUNTED STRONG POSSIBILITY OF SECOND EARTHQUAKE.  
END FYI.  
VANCE

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## Message Attributes

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**Channel Indicators:** n/a  
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